

## RTR Appendix

Southern California Edison, Pacific Gas and Electric, Southern California Gas, and San Diego Gas and Electric (“Joint Utilities” or “Joint IOUs”) developed Responses to Recommendations (RTR) contained in the evaluation studies of the 2013-2015 Energy Efficiency Program Cycle. This Appendix contains the Responses to Recommendations in the report:

***RTR for the Final Report: 2015 Home Upgrade Program Impact Evaluation*** (DNV GL, Calmac ID #CPU0162.01)

The RTR reports demonstrate the Joint Utilities’ plans and activities to incorporate EM&V evaluation recommendations into programs to improve performance and operations, where applicable. The Joint IOUs’ approach is consistent with the 2013-2016 Energy Division-Investor Owned Utility Energy Efficiency Evaluation, Measurement and Verification (EM&V) Plan<sup>1</sup> and CPUC Decision (D.) 07-09-043<sup>2</sup>.

Individual RTR reports consist of a spreadsheet for each evaluation study. Recommendations were copied verbatim from each evaluation’s “Recommendations” section.<sup>3</sup> In cases where reports do not contain a section for recommendations, the Joint IOUs attempted to identify recommendations contained within the evaluation. Responses to the recommendations were made on a statewide basis when possible, and when that was not appropriate (e.g., due to utility-specific recommendations), the Joint IOUs responded individually and clearly indicated the authorship of the response.

The Joint IOUs are proud of this opportunity to publicly demonstrate how programs are taking advantage of evaluation recommendations, while providing transparency to stakeholders on the “positive feedback loop” between program design, implementation, and evaluation. This feedback loop can also provide guidance to the evaluation community on the types and structure of recommendations that are most relevant and helpful to program managers. The Joint IOUs believe this feedback will help improve both programs and future evaluation reports.

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<sup>1</sup> Page 336, “Within 60 days of public release of a final report, the program administrators will respond in writing to the final report findings and recommendations indicating what action, if any, will be taken as a result of study findings. The IOU responses will be posted on the public document website.” The Plan is available at <http://www.energydataweb.com/cpuc>.

<sup>2</sup> Attachment 7, page 4, “Within 60 days of public release, program administrators will respond in writing to the final report findings and recommendations indicating what action, if any, will be taken as a result of study findings as they relate to potential changes to the programs. Energy Division can choose to extend the 60 day limit if the administrator presents a compelling case that more time is needed and the delay will not cause any problems in the implementation schedule, and may shorten the time on a case-by-case basis if necessary to avoid delays in the schedule.”

<sup>3</sup> Recommendations may have also been made to the CPUC, the CEC, and evaluators. Responses to these recommendations will be made by Energy Division at a later time and posted separately.

**Response to Recommendations (RTR) in Impact, Process, and Market Assessment Studies**

**Study Title:** Final Report: 2015 Home Upgrade Program Impact Evaluation

**Program:** HUP

**Author:** DNV GL

**Calmac ID:** CPU0162.01

**ED WO:**

**Link to Report:** <http://calmac.org/startDownload.asp?Name=RES%5F5%2E1%5FHUP%5FFINAL%5FREPORT%2BATR%5F08%2D15%2D17%2Epdf&Size=2647KB>

Item #	Page #	Findings	Best Practice / Recommendations (Verbatim from Final Report)	Recommendation Recipient	PG&E (if applicable)		SCE (if applicable)		SCG (if applicable)		SDG&E (if applicable)		BayREN (if applicable)		SoCalREN (if applicable)	
					Disposition	Disposition Notes	Disposition	Disposition Notes	Disposition	Disposition Notes	Disposition	Disposition Notes	Disposition	Disposition Notes	Disposition	Disposition Notes
				If incorrect, please indicate and redirect in notes.	Choose: Accepted, Rejected, or Other	Examples: Describe specific program change, give reason for rejection, or indicate that it's under further review.	Choose: Accepted, Rejected, or Other	Examples: Describe specific program change, give reason for rejection, or indicate that it's under further review.	Choose: Accepted, Rejected, or Other	Examples: Describe specific program change, give reason for rejection, or indicate that it's under further review.	Choose: Accepted, Rejected, or Other	Examples: Describe specific program change, give reason for rejection, or indicate that it's under further review.	Choose: Accepted, Rejected, or Other	Examples: Describe specific program change, give reason for rejection, or indicate that it's under further review.	Choose: Accepted, Rejected, or Other	Examples: Describe specific program change, give reason for rejection, or indicate that it's under further review.
1		<b>HUP:</b> Program / Project Data are missing, or of poor quality (1-5). Reported savings may not be calculated correctly or homes are not receiving claimed measures (6-7).	Review and correct savings expectations and tracking data for reasonableness. Specifically, 1. In the program database, filter for outliers, zero values, and negative values. 2. Verify the household account numbers for each fuel type and identify service provider. 3. Collect home vintage. Different building codes and techniques will affect savings differently and may help improve program targeting. 4. Collect home square feet and number of floors before and after the project. 5. Develop a consistent definition for project duration. DNV GL recommends project start date as "date of contract signing". For	All Program Administrators / CPUC Data Team / Evaluator	Accepted	PG&E recognizes there were issues with the data quality for the Home Upgrade Program in 2015. Most of these issues stem from the lack of consistent categorization and documentation of the legacy database that was used at the time. Since then, PG&E has transitioned to a Salesforce-based database (Energy Insight) that has more consistent documentation and controls. PG&E believes this will significantly improve program data quality going forward. 1. PG&E does conduct data quality checks to flag and review outliers; however, it is worth noting that zero and negative values are not necessarily incorrect for this program. 2. PG&E automatically	Accepted	SCE appreciates this list of recommendations for the EUC-HU and AHU program. Here are SCE's answers: 1. The program tracks outliers, zero values, and negative values. Zero and negative values are not necessarily incorrect for this program. We report these values to our management quarterly. 2. Accounts numbers are verified for each electric and gas project. 3. The program collects home vintage and climate zone information for each project. 4. The program collects square feet and number of floors before and	Other	SoCalGas appreciates this list of recommendations for the EUC-HUP and AHUP.  In order to meet the plan to transition at least 60% of EE portfolios to third parties by the end of 2020 as ordered in D.16-08-019, SoCalGas will wind-down the HUP in 2018 in preparation to transition the program to third-party non-utility personnel. Nonetheless, the SoCalGas program team will strive to implement these recommendations in a cost-effective manner for the remainder of the program.  The SoCalGas program team may also make these recommendations available to successful third-party program bid-	Other	SDG&E appreciates this list of recommendations for the EUC-HU and AHU program.  Per D.16-08-019, the IOUs are ordered to wind-down programs in 2018 to implement a 60% mandated Third-Party EE Program/s portfolio. As a result of this mandate, this program has been voluntarily scheduled to complete wind-down in 2018 in order to be solicited by a Third-Party Administrator.  The SDG&E program team will strive to implement these recommendations in a cost-effective manner for the remainder of the program.  SDG&E program team will also make these recommendations available to the successful Third-Party	Accepted	Many of the recommendations are already part of BayREN's data tracking practices and others will be added. Addressing each: 1. BayREN will include checks for outliers, zero and negative values in our pre-submittal QC process for CEDARS reports, though these may or may not indicate errors. 2. Verification of account numbers and service providers is in BayREN's current process. 3. Collection of home vintages is in BayREN's current process. 4. BayREN will add to rebate application and verification checks a question	Other	1. Other – SoCalREN agrees to filter for outliers, zero or negative values as it pertains to "projects" however we would not recommend removing negatives values specific to measures or components within in a specific project because it could alter the overall net savings of a project and could possibly alter the accuracy of a project's savings. 2. Accepted – SoCalREN currently implements this recommendation. 3. Accepted – SoCalREN currently implements this recommendation.

			<p>end date, we recommend “project inspection date”.</p> <p>6. Continue or begin to verify measure installations for a wider sample of homes—particularly in coastal climate zones.</p> <p>7. Review the electric and gas assumptions and calculations in the EUCA model for reasonableness relative to customer bills. Typical savings should be about 5% to 10% of annual usage. If possible, compare a sample of projects in EUCA and EnergyPro or eQuest for consistency of savings estimates.</p>		<p>conducts an account and service agreement verification as part of its incentive application processing.</p> <p>3. PG&amp;E collects the home vintage for every project; however, only the Building Vintage Code is transmitted to the CEDARS database. If this data point is required for future evaluations, PG&amp;E can provide it separately.</p> <p>4. PG&amp;E currently only collects a single value for both square footage and number of floors, but will add this to its data collection going forward. As with #3 above, this data cannot be transmitted to CEDARS, but will be available by request.</p> <p>5. PG&amp;E relies on the definitions developed as part of the HPXML open data standard: Project Start Date (B.16.1.13) and Actual Project Completion Date (B.16.1.15). Ref: <a href="http://dev-hpxml.pantheon.io/wp-content/uploads/2016/08/BPI-2200-S-2013-Standard-for-Home-Performance-Related-Data-Collection-v2.2.0.pdf">http://dev-hpxml.pantheon.io/wp-content/uploads/2016/08/BPI-2200-S-2013-Standard-for-Home-Performance-Related-Data-Collection-v2.2.0.pdf</a>.</p> <p>6. PG&amp;E currently inspects 5% of participating homes at random as part of</p>		<p>after for each project.</p> <p>5. The program has a consistent definition for start and end dates. The program uses “Reservation Date Received” as the start and “Notice of Incentive Approval” as the end date.</p> <p>6. The program team will continue to implement these recommendations in a cost-effective manner during 2018.</p> <p>7. The program team will strive to implement these recommendations in a cost-effective manner during 2018.</p>		<p>ders to ensure program continuity.</p>		<p>program bidders to ensure continuity.</p>		<p>of whether area or equipment was added to the home.</p> <p>5. BayREN will work with the other PAs to adopt consistent definitions of project start and end dates.</p> <p>6. BayREN will add photo documentation requirements to increase breadth of verification without increasing program costs.</p> <p>7. The EUCA model is based on simulations calibrated to early participants’ bills; energy savings for common packages are in the range of 5-15% of baseline use.</p>	<p>4. Accepted – SoCalREN currently implements this recommendation.</p> <p>5. Other – SoCalREN recommends utilizing “reservation date” as the start date and the end date as “completed paperwork submitted.” The reservation date is the date in which the PA becomes aware of the project whereas the contract signing could occur before or after. Not all of our projects are inspected by the program which would not provide a consistent “end date.”</p> <p>6. Accepted – SoCalREN currently implements this recommendation</p> <p>7. Not applicable to SoCalREN.</p>
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						its Central Inspection Program. In addition, Build It Green conducts additional Field Quality Control inspections to ensure contractors are following program requirements and performing quality installs.										
2		<p><b>AHUP:</b> Program / Project data are missing, or of poor quality (1-6). Reported savings may not be calculated correctly or homes are not receiving claimed measures (7).</p>	<p>Review and correct savings expectations and tracking data for reasonableness. Specifically,</p> <ol style="list-style-type: none"> <li>1. In the program database, filter for outliers, zero values, and negative values.</li> <li>2. Verify the household account numbers for each fuel type and identify service provider.</li> <li>3. Collect home vintage. Different building codes and techniques will affect savings differently.</li> <li>4. Collect home square feet before and after the project. A household increase actually may be decrease on a per square foot basis.</li> <li>5. Develop a consistent definition for project duration. DNV GL recommends project start date as "date of contract signing". For end date, we recommend, "project inspection date".</li> <li>6. Collect and review model inputs and outputs from contractors using simulation software.</li> </ol>	All IOU Program Administrators / CPUC Data Team	Accepted	<p>PG&amp;E recognizes there were issues with the data quality for the Home Upgrade Program in 2015. Most of these issues stem from the lack of consistent categorization and documentation of the legacy database that was used at the time. Since then, PG&amp;E has transitioned to a Salesforce-based database (Energy Insight) that has more consistent documentation and controls. PG&amp;E believes this will significantly improve program data quality going forward.</p> <ol style="list-style-type: none"> <li>1. PG&amp;E does conduct data quality checks to flag and review outliers; however, it is worth noting that zero and negative values are not necessarily incorrect for this program.</li> <li>2. PG&amp;E automatically conducts an account and service agreement verification as part of its incentive application processing.</li> <li>3. PG&amp;E collects the home vintage for</li> </ol>	Accepted	<ol style="list-style-type: none"> <li>1. The program tracks outliers, zero values, and negative values. Zero and negative values are not necessarily incorrect for this program. We report these values to our management quarterly.</li> <li>2. Accounts numbers are verified for each electric and gas project.</li> <li>3. The program collects home vintage and climate zone information for each project.</li> <li>4. The program collects square feet and number of floors before and after for each project as part of pre and post-testing.</li> <li>5. The program has a consistent definition for start and end dates. The program uses "Reservation Date Received" as the start and "Notice of Incentive Approval" as the end date.</li> </ol>	Other	Same as Reply #1.	Other	Same as Reply #1.	Other	N/A	Other	N/A



						7. PG&E currently inspects 5% of participating homes at random as part of its Central Inspection Program. In addition, Build It Green conducts additional Field Quality Control inspections to ensure contractors are following program requirements and performing quality installs. Furthermore, PG&E may conduct additional inspections based on findings from pre/post savings evaluations.										
3		<b>HUP/AHUP:</b> Savings may be affected by weather data in certain climate zones.	<b>Savings influences:</b> Upgrading the building envelope is not enough to affect usage. The program should target the inland climate zones and should incorporate a behavioral component to account for potential savings.  Regarding climate zones. DNV GL recommends additional research on projects in climate zones 1-4. Specifically, CalTrack should develop savings kWh estimates for projects in these climate zones to verify the savings estimates from this evaluation.  Based on the results from the customer profiles, DNV GL recommends, 1. targeting customers who live in older homes 2. focusing on climate zones with a wider range of heating cooling degree days and, 3. underscoring immediate customer benefits	All Program Administrators, CalTrack Team	Accepted	PG&E plans to explore customer targeting using home vintage information in climate zones with a wide range of heating and cooling degree days.	Accepted	The program team will strive to implement these recommendations in a cost-effective manner during 2018.	Other	Same as Reply #1.	Other	Same as Reply #1.	Other	BayREN agrees that behavioral components should complement envelope and HVAC upgrades. BayREN Energy Advisors currently provide behavior recommendations to homeowners and BayREN will continue to strengthen that dimension of the program going forward. BayREN does not currently have a CalTrack implementation or access to customer billing data given PG&E's data restrictions. BayREN is exploring methods for increased access and analysis of customer meter data independently and with the assistance of regulatory and legislative efforts.  Since 2015, BayREN has increased targeting toward older vintage homes. Regarding climate zone fo-	Accepted	1. Accepted – SoCalREN at present only targets homes built in 2001 or earlier. 2. Other – SoCalREN targets customers within its service territory thus is limited to the climate zones within Los Angeles County. 3. Accepted – SoCalREN currently implements this recommendation.

			in contractor messaging (comfort, savings, safety)											cus, BayREN's territory is largely comprised of milder climate zones. Accordingly, BayREN will diversify the program measure mix over time, so envelope and HVAC measures can be deployed where effective.  BayREN will also focus on more lighting, plug load and behavioral measures deployed elsewhere.		
4		<b>HUP/AHUP:</b> Level of free riders is low.	<b>Free riders:</b> The programs are doing a relatively good job of avoiding free riders. The recommendations to maintain low free ridership levels are similar to the recommendations under savings influences with some caveats. Targeting older homes may produce more savings, but may also increase free ridership since upgrades in older homes may be initiated by the failure of major appliance such as furnaces, water heaters or air conditioners.	All Program Administrators	Accepted		Accepted	The program will continue to strive to maintain a low level of free ridership.	Other	Same as Reply #1.	Other	Same as Reply #1.	Other	BayREN is aware of this potential. (This is not a recommendation so BayREN has responded to the disposition as other.)	Accepted	SoCalREN will continue to strive for low levels of free-ridership.
5		<b>HUP/AHUP:</b> Project data are missing, or of poor quality.	<b>Data quality:</b> A thorough review of the HUP and AHUP program tracking data should be completed by each PA on an on-going basis and certainly each quarter before reporting program status to CPUC. The tracking data should not require several large-scale updates after the close of the program year. This will help ensure accurate quarterly and annual reporting and avoid unnecessary delays of the impact evaluation due to shifting data.  Track and report the number and types of measures being installed	All Program Administrators	Accepted	PG&E recognizes there were issues with the data quality for the Home Upgrade Program in 2015. Most of these issues stem from the lack of consistent categorization and documentation of the legacy database that was used at the time. Since then, PG&E has transitioned to a Salesforce-based database (Energy Insight) that has more consistent documentation and controls. PG&E believes this will significantly improve program data quality going forward.	Accepted	For AHUP projects, the program completes a reasonable-ness review of savings on all projects from each contractor to rule out systematic bias caused by misuse of the software, data entry errors, or errors transferring data from model output to program form.	Other	Same as Reply #1.	Other	Same as Reply #1.	Accepted	BayREN tracks the number and types of measures being installed in homes. Since 2015, BayREN has increased the frequency and depth of internal analysis and reporting on this data.  Going forward, BayREN will formalize our procedures for quarterly reporting data reviews and include the specific data quality checks recommended in the first recommendation.  Since BayREN does	Accepted	SoCalREN will continue to strive to thoroughly review and correct data so that it will ensure accurate quarterly and annual reporting and avoid unnecessary delays.

